OIPE JC177
APR 2 2 2004
PATENT & TRADEMARK OFFICE

FIG. 1A
CLIPMAP REGION WITHIN A MIPMAP

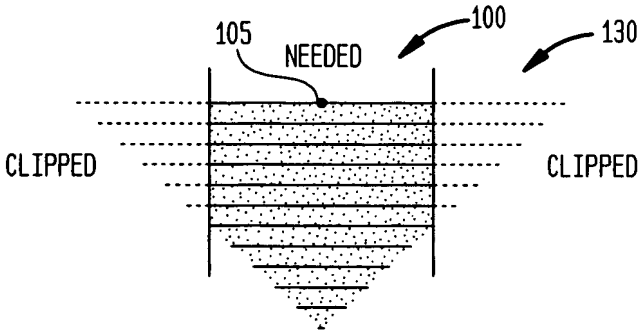


FIG. 1B
CLIPMAP STACK AND PYRAMID LEVELS

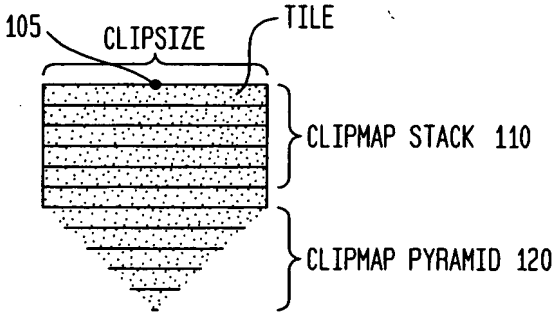


FIG. 2A

32Kx32K TEXTURE REPRESENTED AS A 2Kx2K CLIP-MAP 200

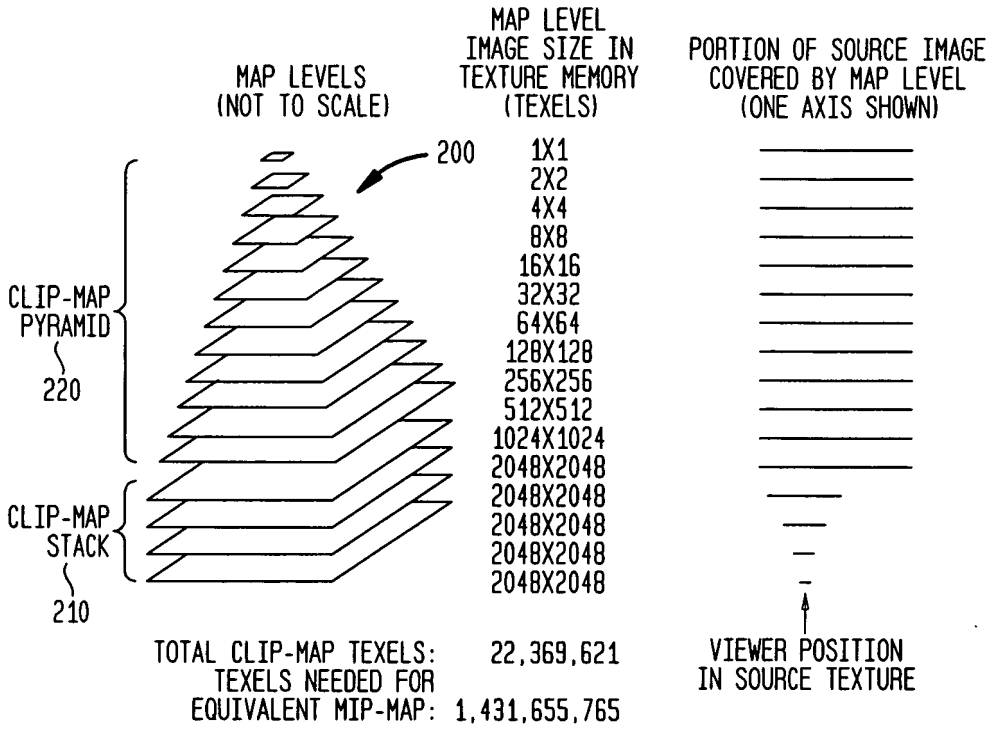
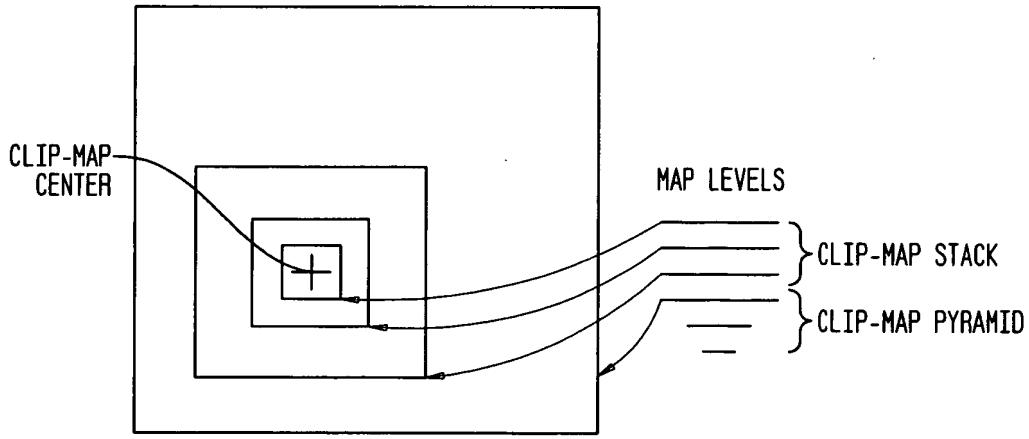


FIG. 2B

CLIP MAP LEVELS



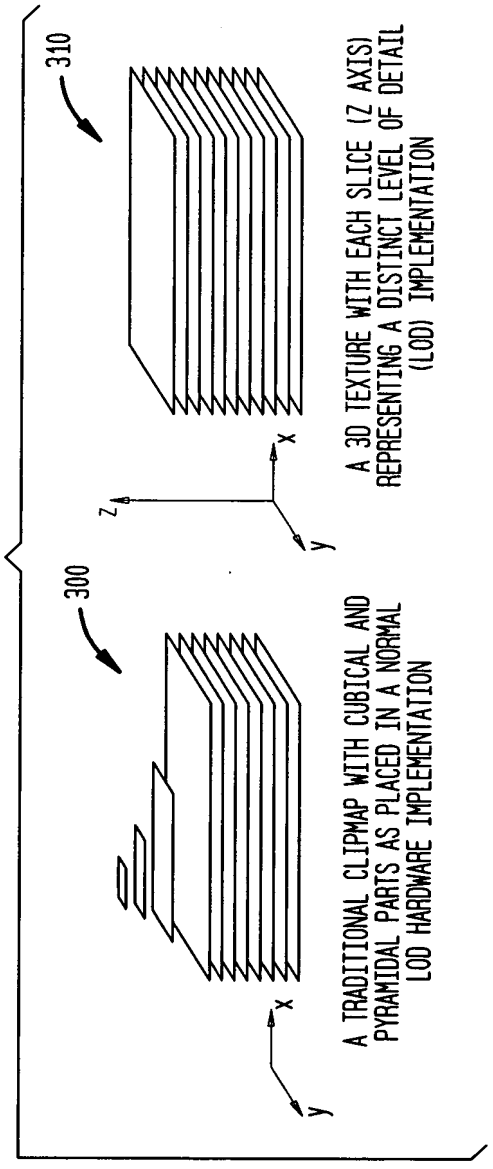


FIG. 3
REPRESENTATION OF A CLIPMAP IN NORMAL 2D LOD BASED FORM AND AS A 3D TEXTURE

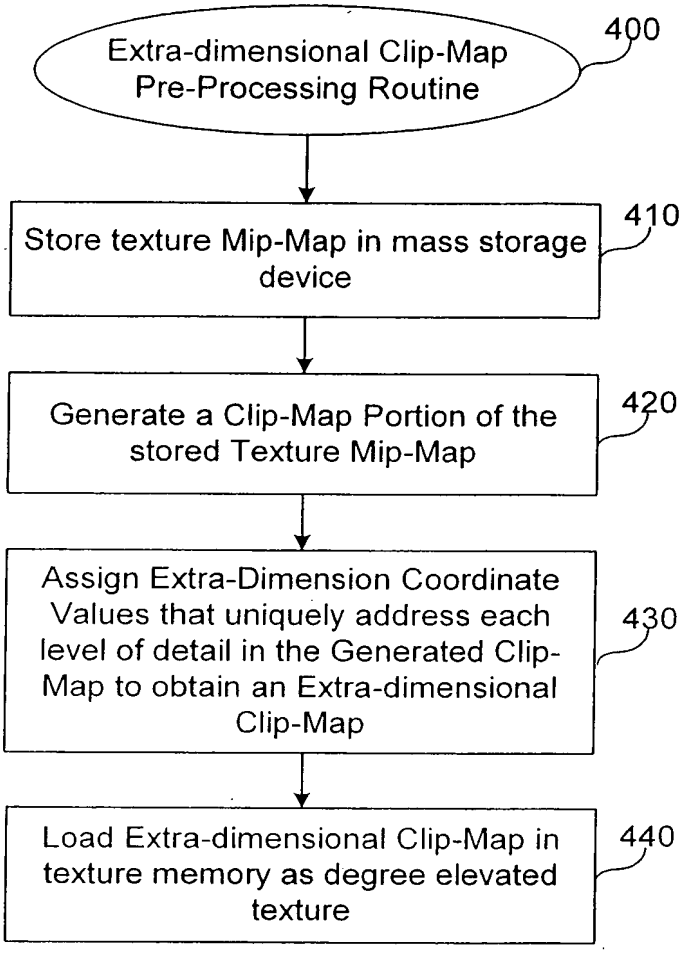

Extra-dimensional Clip-Map Pre-Processing Routine
400
Store texture Mip-Map in mass storage device
410
Generate a Clip-Map Portion of the stored Texture Mip-Map
420
Assign Extra-Dimension Coordinate Values that uniquely address each level of detail in the Generated Clip-Map to obtain an Extra-dimensional Clip-Map
430
Load Extra-dimensional Clip-Map in texture memory as degree elevated texture
440

FIG. 4

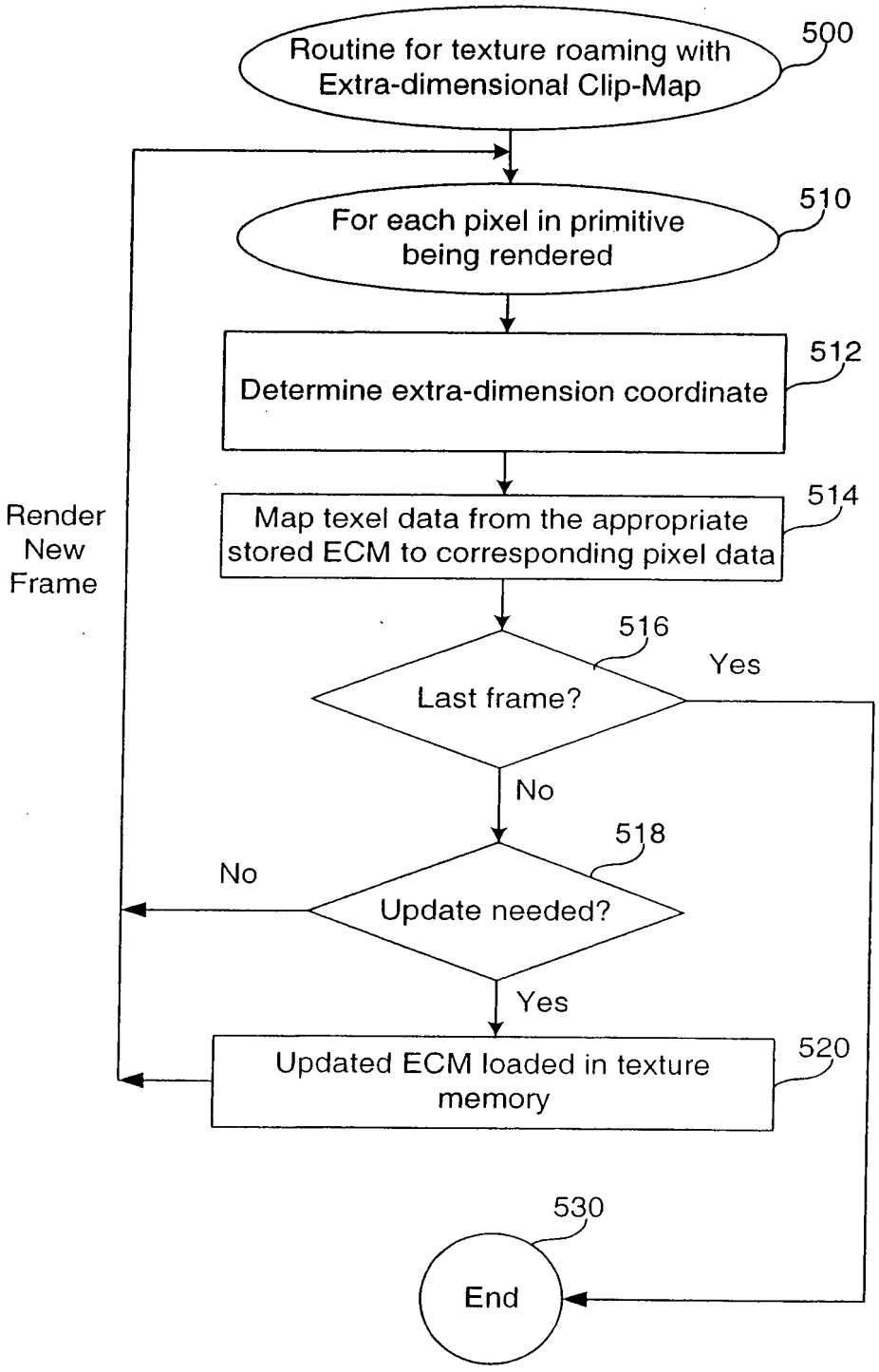

Routine for texture roaming with Extra-dimensional Clip-Map
500
For each pixel in primitive being rendered
510
Determine extra-dimension coordinate
512
Map texel data from the appropriate stored ECM to corresponding pixel data
514
Render New Frame
516
Last frame?
Yes
No
518
No
Update needed?
Yes
Updated ECM loaded in texture memory
520
530
End

FIG. 5

ARCHITECTURE 600

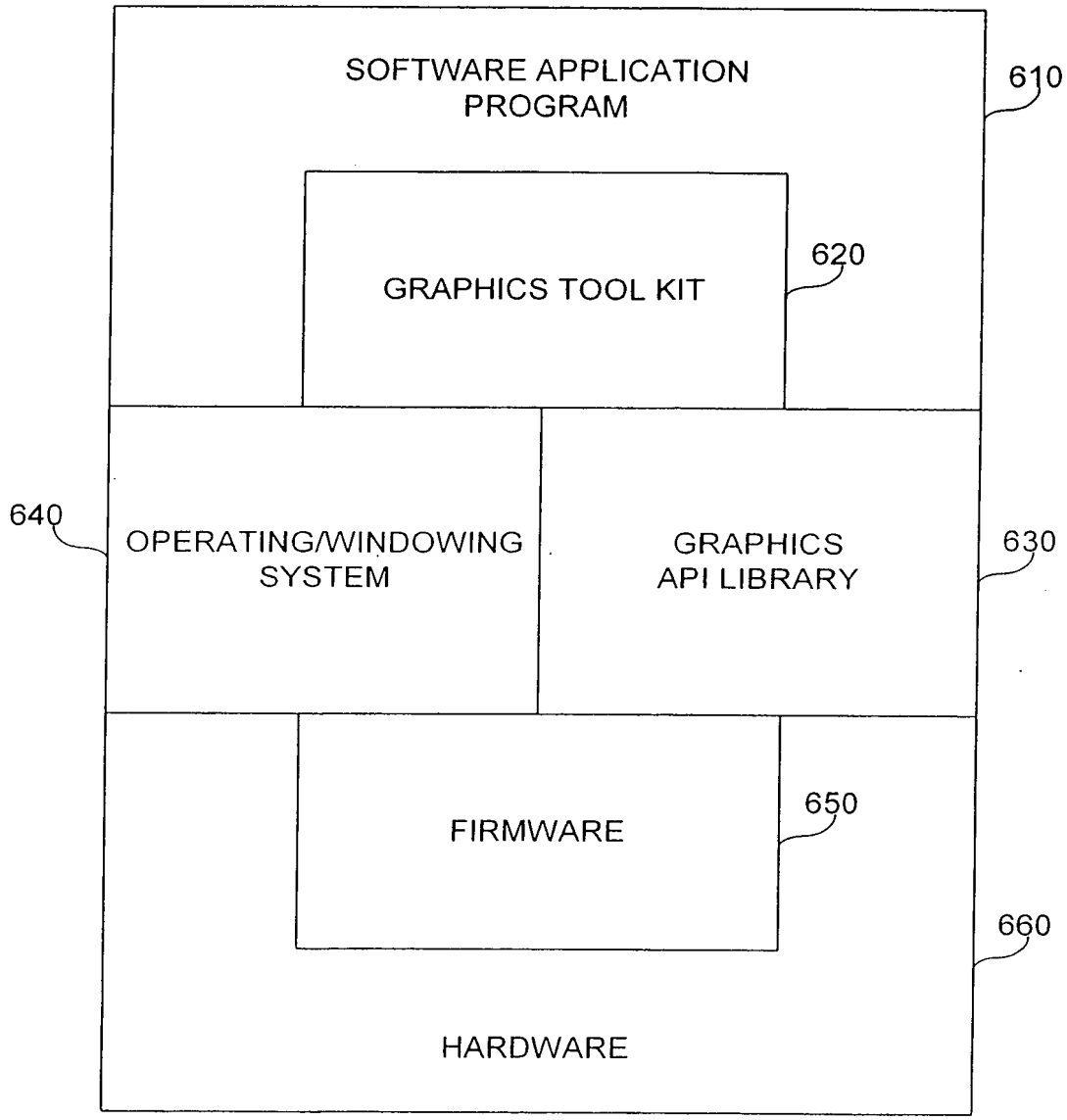


FIG. 6

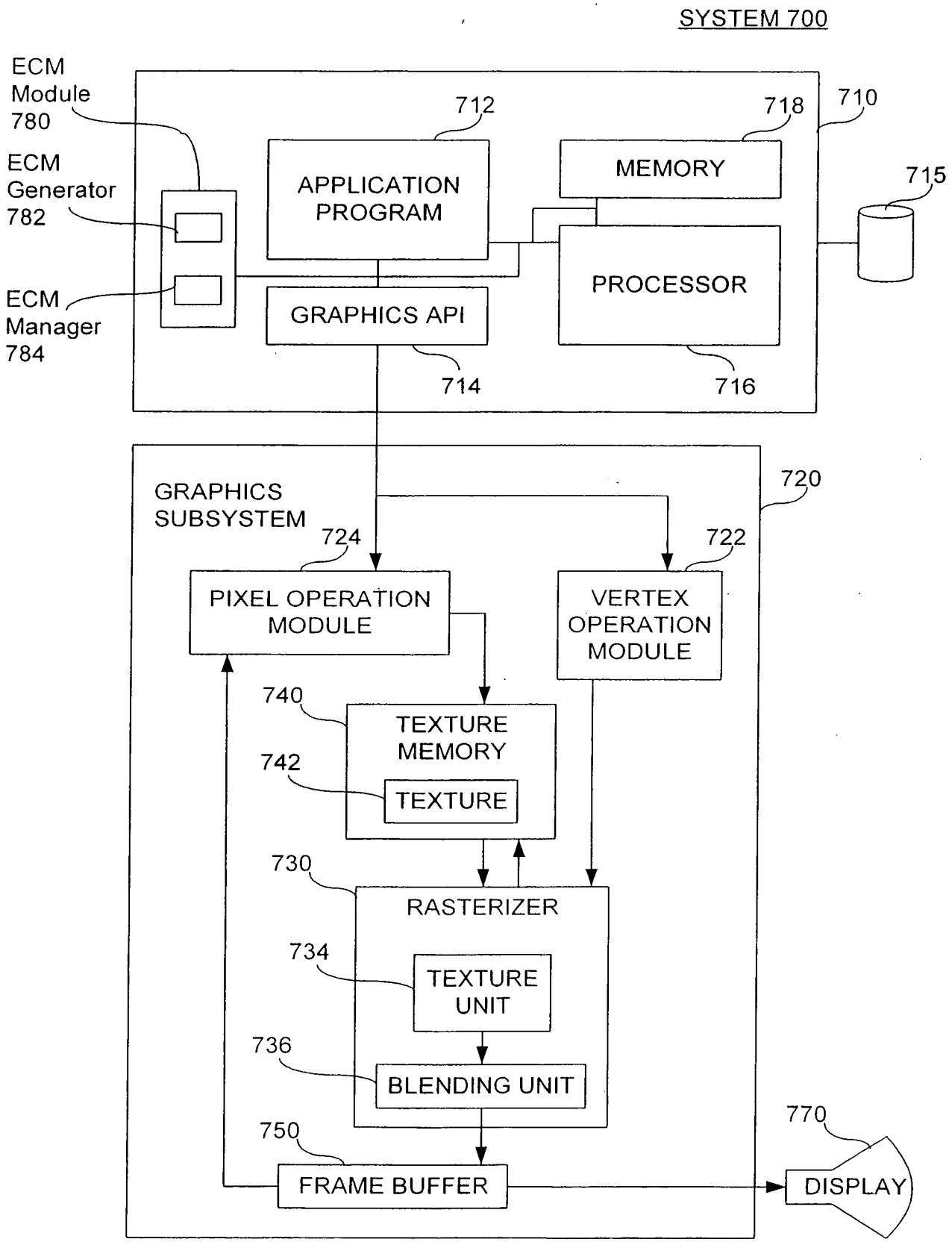

SYSTEM 700
ECM Module 780
ECM Generator 782
ECM Manager 784
712
APPLICATION PROGRAM
718
MEMORY
710
715
PROCESSOR
GRAPHICS API
714
716
GRAPHICS SUBSYSTEM
720
724
722
PIXEL OPERATION MODULE
VERTEX OPERATION MODULE
740
TEXTURE MEMORY
742
TEXTURE
730
RASTERIZER
734
TEXTURE UNIT
736
BLENDING UNIT
750
FRAME BUFFER
770
DISPLAY

FIG. 7